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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/622,347 | 07/19/2003 | Ching-Fuh Lin | 03175-UPS | 4789 |
| 33804 | 7590 | 09/09/2005 | EXAMINER | |
| SUPREME PATENT SERVICES POST OFFICE BOX 2339 SARATOGA, CA 95070 | | | NGUYEN, TUAN N | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2828 | |
| DATE MAILED: 09/09/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

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|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/622,347 | LIN ET AL. | |
| | Examiner | Art Unit | |
| | Tuan N. Nguyen | 2828 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07/19/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7-11 and 13-32 is/are rejected.
- 7) ☒ Claim(s) 3,6 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 13, 31 are objected to because clarification is need; it is not clear the width of the waveguide is designed relatively wider than what, and the structure of the staggered formation of the interface waveguide.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or non-obviousness.
3. Claims 1,2,4,5,7-11 and 13-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behfar-Rad (US 5132983).

With respect to claims 1, 26, 31 Behfar-Rad '983 disclose a semiconductor laser with waveguide structure formed in semiconductor unit (Fig 2b, 17a/b), having a plurality of waveguides with boundary serves a reflective surface for reflecting light wave (Fig 1-5: 10, 14,16,18), having a plurality of interfaces for reflecting or transmitting light by intersect with the

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cleaved facets (Fig 1-16) (Fig 5: 46,73,34,76,75,70) (Fig 7: 120-134), where the direction of each waveguide is not perpendicular to the partial connected interface (Fig 6: 96-120). The claim further requires the width of the waveguide is more than 10um. Behfar-Rad '983 did not discreetly disclose the width of the waveguide, however it is inherently obvious that the waveguide has a width. It has been held that where the general conditions of a claim are disclosed in the prior art, disclosing the optimum or workable ranges involves only routine skill in the art, in this case the actual width of the waveguide. In re Aller, 105 USPQ 233.

With respect to claims 2,4,5, 24,25 (Fig 5: 36,50,46,71,73,34,76) shows the waveguide structure capable of propagating light wave, and both ends of waveguide are extended to reach the cleaved facet of the light emitting semiconductor unit and form two interfaces, which each interface is connected with a corresponding waveguide so that the light is propagating through every waveguide sequentially and optimally. It is within one skill in the art to recognize that the in order for light propagate optimally the refractive index inside the waveguide structure is larger outside waveguide, so that the light can propagate within the waveguide.

With respect to claims 7-11, 13, (Fig 6-11) show the waveguide structure has four or more waveguides and interfaces staggered, with proper deflection angles such that each interface is connected with a corresponding waveguide for transmitting light wave through every waveguide in order (Fig 8: 140-170).

With respect to claims 14-18 (Fig 6-11) shows at least three, five or more waveguide with proper deflection angle capable of propagating light wave, and the five interfaces connected with

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a corresponding waveguide to enable light wave to propagate through every waveguide (Fig 8: 140-170), with waveguide in the form of V-type or W-type (Fig 10; Fig 7: 120-132)..

With respect to claims 19-21, 23, 32 (Fig 2b: 12) shows the waveguide is a ridge formation where the lateral edge are lower than the ridge (Fig 17b: 290, 298), where the ridge formation is made by chemical etching (Fig 17a/c: 302 Chemical etching), and the waveguide is a buried-hetero structure (Fig 17d).

With respect to claim 22, the claim requires the laterals of ridge etched down to a depth of 50-200nm higher of lower than active layer. It has been held that where the general conditions of a claim are disclosed in the prior art, disclosing the optimum or workable ranges involves only routine skill in the art, in this case by having the ridge the laterals of ridge inherently has a depth. In re Aller, 105 USPQ 233.

With respect to claims 27-30, (Col 2: 10-25, 55-65) disclose the mirror reflector to selectively change the light propagation and or direction.

Allowable Subject Matter

4. Claims 3,6, 12 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The references of the record fail to teach or suggest:

Claims 3, 6:

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Wherein the inclined angle of the waveguide structure and the normal of a connected interface is 3-40 or 3-50 degrees.

Claim 12:

Wherein two of three waveguides are in parallel, while the third waveguide is interface the two parallel waveguide, where the inclined angle defined by the two parallel waveguide and the normal of interface is 3-40 degrees, and the inclined angle defined by the third waveguide is double of that defined by the two parallel waveguide.

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (571) 272-1948. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harvey Minsun can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan N. Nguyen



Acumant D.
Examiner
Art Unit 2828